mpitasks

Documentation by Alex Baker, 2021

The file mpitasks.tcl defines three commands that can be used in parallel (OpenSeesMP or OpenSeesMPI) to efficiently distribute tasks, using a load-sharing parallel scheme.

Main Command

The command *delegateTasks* defines the command prefix used to execute the tasks, and a coordinator body that is only evaluated in process 0. If running in parallel, the number of workers will be N-1, where N is the number of processes. If running in series, the coordinator will both assign and execute the tasks.

delegateTasks $commandPrefix $coordinatorBody

$commandPrefix	Command to run, concatenating with inputs from *sendTask*.
$coordinatorBody	Body to evaluate, using the *sendTask* command to assign tasks.

Sending Tasks

The command *sendTask* sends input arguments to a worker process, returning a unique task ID, corresponding to the index in the result list returned by *recvResults*. This command can only be called within the **$coordinatorBody** of the *delegateTasks* command.

sendTask $arg1 $arg2 …

$arg1 $arg2 …	Arguments to append to **$commandPrefix** specified in *delegateTasks*.

Receiving Task Results

Results from tasks can be queried with *recvResults*. If the specified task is not complete, it will wait until it is complete before returning the result.

recvResults <$taskID>

$taskID	Task ID returned by *sendTask*. Default returns list of all results.